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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/707,206

11/26/2003

Michael A. Gaynes

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IBM MICROELECTRONICS
INTELLECTUAL PROPERTY LAW
1000 RIVER STREET
972 E
ESSEX JUNCTION, VT 05452

EXAMINER

IM, JUNGHWA M

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 06/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/707,206	GAYNES ET AL.	
	Examiner	Art Unit	
	Junghwa M. Im	2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3/28/2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 14-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 21-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4/2006</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites a limitation of “a conductive lid substantially coplanar with said first side of said chip carrier.” It is confusing since the instant invention shows that the conductive lead is formed on top of the chip, therefore, a conductive lid cannot be coplanar with said first side (top surface) of said chip carrier. Claim 21 recites a limitation substantially identical to the one in claim 1 in nature.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 and 21-23 are rejected under 35 U.S.C. 102(e) as being anticipated by Huang et al. (US 6472743), hereinafter Huang.

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Regarding claims 1 and 21, insofar as understood, Fig. 1 of Huang shows a semiconductor package comprising:

- a chip carrier [20] including a grounded pad [204 in Fig. 4] on a first side of said chip carrier;

- a semiconductor chip [21] coupled to said first side of said chip carrier;

- a conductive lid [231; heat sink] thermally coupled to said semiconductor chip; and

- a conductive structure [230] electrically coupled to said grounded pad and to said conductive lid.

Regarding claim 22, Fig. 1 of Huang shows an end of the conductive lid extends beyond at least one side of the semiconductor chip.

Regarding claim 23, Fig. 1 of Huang shows the conductive structure is located on the first side of the chip carrier.

Claims 1, 8 and 21-23 are rejected under 35 U.S.C. 102(e) as being anticipated by Shim et al. (US 6775140), hereinafter Shim.

Regarding claims 1 and 21, insofar as understood, Fig. 8 of Shim shows a semiconductor package comprising:

- a chip carrier [110] including a grounded pad (col. 8, lines 10-13) on a first side of said chip carrier;

- a semiconductor chip [108] coupled to said first side of said chip carrier;

- a conductive lid [200; heat sink] thermally coupled to said semiconductor chip; and

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a conductive structure [304, 306] electrically coupled to said grounded pad and to said conductive lid (col. 8, lines 10-13).

Regarding claim 8, Shim discloses that said conductive structure comprises a block (col. 6, lines 25-30).

Regarding claim 22, Fig. 8 of Shim shows an end of the conductive lid extends beyond at least one side of the semiconductor chip.

Regarding claim 23, Fig. 8 of Shim shows the conductive structure is located on the first side of the chip carrier.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shim in view of Terui (US 6225694).

Regarding claim 2, Shim discloses most aspects of the instant invention except “a solder connects said conductive structure and said grounded pad.” Fig. 1 of Terui shows a solder [16, col. lines 52-54] connects said conductive structure and said grounded pad.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teachings of Terui into the device of Shim in order to have a solder

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connecting said conductive structure and said grounded pad for connection of the metallic structures.

Regarding claim 3, Shim discloses most aspects of the instant invention except “a solder connects said conductive structure and said grounded pad.” Fig. 1 of Terui shows a solder [16; col. lines 52-54] connects said conductive structure and said grounded pad.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teachings of Tenui into the device of Shim in order to have said conductive structure electrically coupled to said grounded pad with an electrically conductive adhesive material for grounding effect.

Regarding claim 4, Shim discloses most aspects of the instant invention except “conductive structure is electrically coupled to said conductive lid with an electrically conductive adhesive material.” Fig. 1 of Terui shows said conductive structure is electrically coupled to said conductive lid with an electrically conductive adhesive material [16; anisotropic conductive adhesive; col. 2, lines col. lines 52-54].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teachings of Tenui into the device of Shim in order to conductive structure electrically coupled to said conductive lid with an electrically conductive adhesive material for ground effect.

Claims 5-6, 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shim and Tenui as applied to claim 1 above, and further in view of Mertol (US 5866943).

Regarding claim 5, the combined teachings of Shim and Tenui show substantially the entire claimed structure except “said conductive structure is coupled to said chip carrier using an

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electrically insulative adhesive material.” Fig. 3 of Mertol shows a semiconductor wherein a conductive structure [24] is coupled to said chip carrier [22] using an electrically insulative adhesive material (col. 8, lines 59-64). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teachings of Mertol into the device of Shim and Terui in order to have the conductive structure coupled to said chip carrier using an electrically insulative adhesive material to prevent possible short circuits.

Regarding claim 6, the combined teachings of Shim and Tenui show substantially the entire claimed structure except “said conductive structure is coupled to said chip carrier using a thermally conductive adhesive material.” Fig. 3 of Mertol shows a semiconductor wherein a conductive structure [24] is coupled to said chip carrier [22] using a thermally conductive adhesive material (col. 8, lines 59-64). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teachings of Mertol into the device of Shim and Terui in order to have the conductive structure coupled to said chip carrier using a thermally conductive adhesive material to enhance heat dissipation.

Regarding claim 10, the combined teachings of Shim and Tenui show substantially the entire claimed structure including a solder [16] couples said conductive structure to said grounded pad, however, fails to show “an electrically conductive adhesive material couples said conductive structure to said conductive lid; and an electrically insulative adhesive material couples said conductive structure to the chip carrier.” Fig. 3 of Mertol shows a semiconductor wherein an electrically conductive adhesive material [42; col.10, lines 22-25] couples said conductive structure [24] to a conductive lid [26] and an electrically insulative adhesive material couples [36; col. 8, lines 59-64] said conductive structure to a chip carrier [22]. It would have

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been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teachings of Mertol into the device of Shim and Terui in order to have an electrically conductive adhesive material coupling the conductive structure to the conductive lid for grounding effect and an electrically insulative adhesive material coupling the conductive structure to a chip carrier for prevention of short circuits.

Regarding claim 12, Fig. 2B of Terui shows said conductive structure [4] comprises a block.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shim and Terui as applied to claim 1 above, and further in view of Glenn et al. (US 6562655), hereinafter Glenn.

Regarding claim 7, the combined teachings of Shim and Tenui show substantially the entire claimed structure except “said conductive structure comprises a spring.” Fig. 6 of Glenn shows a semiconductor with a conductive structure comprising a spring [150]. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teachings of Glenn into the device of Shim and Terui in order to have a conductive structure comprising a spring to secure the conductive lid.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shim and Terui as applied to claim 1 above, and further in view of Hoffman (US 6630661).

Regarding claim 9, the combined teachings of Shim and Tenui show substantially the entire claimed structure except “said conductive structure comprises a surface mount technology (SMT) discrete component.” Fig. 7 of Hoffman shows a semiconductor with a block comprising a

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surface mount technology (SMT) discrete component [154; col. 6, lines 47-50] It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teachings of Hoffman into the device of Shim and Terui in order to have semiconductor device with a block comprising a surface mount technology (SMT) discrete component to form an IC.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shim, Terui and Mertol as applied to claim 10 above, and further in view of Glenn.

Regarding claim 11, the combined teachings of Shim, Terui and Mertol show most aspect of the instant invention except "said conductive structure comprises a conductive spring." Fig. 6 of Glenn shows a semiconductor with a conductive structure comprising a conductive spring [150]. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teachings of Glenn into the device of Shim, Terui and Mertol in order to have a conductive structure comprising a conductive spring to secure the conductive lid.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shim, Terui and Mertol as applied to claim 10 above, and further in view of Hoffman.

Regarding claim 13, the combined teachings of Shim, Terui and Mertol show most aspect of the instant invention except "said block comprises a surface mount technology (SMT) discrete component." Fig. 7 of Hoffman shows a semiconductor with a block comprising a surface mount technology (SMT) discrete component [154; col. 6, lines 47-50] It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teachings

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of Hoffman into the device of Shim, Terui and Mertol in order to have semiconductor device with a block comprising a surface mount technology (SMT) discrete component to form an IC.

Response to Arguments

Applicant's arguments with respect to pending claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

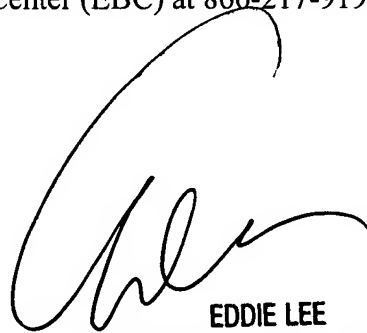
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Junghwa M. Im whose telephone number is (571) 272-1655. The examiner can normally be reached on MON.-FRI. 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on (571) 272-1732. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jmi

A handwritten signature in black ink, appearing to read 'Eddie Lee', with a large, sweeping initial 'E'.

EDDIE LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800